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No. III.

REPORT BY ARCHITECTS OF GLASGOW,

FELLOWS OF THE ARCHITECTURAL INSTITUTE OF SCOTLAND,

ON THE

SANITARY IMPROVEMENT OF THE CITY OF GLASGOW.

[*Read at the Meeting of the Institute in Glasgow, the 11th December* 1851.]

In terms of the communication conveyed to us through Arthur Forbes, Esquire, one of the town-clerks of this city, of date the 5th November last, in reference to the erection of certain buildings intended for the occupation of tenants of the humbler classes, and which were likely to become, ere long, most injurious to the public health, the *foci* of disease and poverty, and, on the occurrence of an epidemic, the certain means of propagating fever in the neighbourhood, and to the best course to be adopted with the view of preventing the erection of such buildings throughout the city, and of promoting its sanitary improvement,—we have made personal inspection of many portions of the city, have considered its various features, in reference to the principal points

of enquiry, and, after numerous meetings and much deliberation, now take the liberty of submitting the following Report.

It seems at the outset to be hardly necessary to produce any evidence in regard to the evils for which a remedy is so urgently demanded.

The over-crowding of the inhabitants of this city within excessively limited bounds, the over-peopling of numerous localities, the defective sewerage, and the still more defective supply of water, are too well known. We need no evidence as to the existence of these things—they are before us, and may be seen by every one. Let any one examine, even by a casual visit, any of our densely peopled wynds or closes, and he will at once feel mournfully convinced of the sad reality.

Who can think of these miserable places, the abodes and nurseries of filth and disease, and of crime, the plague-spots to which strangers point to our shame, those great impediments to the successful labours of the philanthropist and the Christian, without the deepest and the most compassionate emotions.

But these alone will never suffice to meet this tremendous evil. We have now work before us, to cure and to prevent; for it must not be forgotten that the evils so justly complained of are not confined to the older portions of the city. The over-crowding of houses, and comprising vast numbers of human beings together, almost without light or air, are going on all around us; and the remedies required are therefore for prevention as well as for cure.

Under the strongest conviction that if these evils be fearlessly met,—if wise and wholesome provisions be made—if ample powers be given to enforce them,—the sanitary condition of the city will be vastly improved, and the moral standing of the masses elevated,—we proceed to treat of these re-

medial measures; and that we may present them in a regular form, we have divided the subject into the three following sections:—

First—THE WIDTH OF STREETS, HEIGHT OF BUILDINGS, AND OPENING UP OF THOROUGHFARES.
Second—DRAINAGE.
Third—SUPPLY OF WATER.

Following this arrangement, we take up the first section, viz.:—

Section First—The Width of Streets, Height of Buildings, and Opening up of Thoroughfares.

It is obvious that thorough ventilation—complete diffusion of light and air—are primary objects in the construction of a city. Rapidly growing cities, like ours, are too frequently neglectful of these important elements; and consequently, from a want of expansiveness sufficient for the growth of the population, have been subjected to all the evils arising from the congregating of vast masses in overcrowded localities. Even at the present day the evil has been perpetuated, and from the high price of ground and other causes, temptations are continually in the way, leading to the erection of crowded courts and lanes, which will, in the course of a few years, become as intolerable nuisances as the older portions of the city.

Allusion cannot fail to be made here to the buildings recently erected in the Drygate, now known under the appellation of the 'Rookery.' In this erection, where fifty-three families are to be accommodated—all having access by one common stair, the steps of which between the wall and the newal are only about two feet nine inches wide—where the apartments are so miserably confined, some of them for one family being only

about 10′ : 6″ × 9′ : 6″ and 7′ : 8″ high—where the access from the street is so tortuous and narrow, and where no attention whatever has been paid to proper ventilation,—everything that can minister to the comfort and well-being of the classes who may inhabit it has been grossly overlooked.

The subjects now to be considered are therefore surrounded with many difficulties. Doubtless the remedial measures to be proposed will encounter much opposition, but all private interests ought to give way to the public good, and legislative enactments ought to be obtained for the purpose of carrying the necessary remedial measures into effect.

In laying out new streets and lanes, it is our opinion that the width of these should, in a great measure, be regulated by the locality and the class of houses intended to be erected.

For self-contained houses no street should be narrower than 80 feet. In this width of street we would restrict the height of the front wall to 35 feet above the line of pavement, embracing two square storeys above the basement. For each additional storey 10 feet ought to be added to the width of the street, but the corner and centre houses of a compartment might be built a storey higher. For this class of property the ground from the street building line to the centre of the lane behind should not be less than 110 feet in breadth, and the lane should not be less than 16 feet in width.

The back jambs of houses, or the returns of houses, in cross streets, should not come nearer than 45 feet to the centre of the lane. All public buildings requiring the occupation of more back ground should be restricted to have areas or open spaces on each side, each not less than 15 feet. In no case should dwelling-houses be allowed in the offices next the lanes.

For houses built in flats the width of street should be determined by the height of buildings. For instance, three

square storeys above the line of pavement should have a street not less than 60 feet in width, and for each additional storey upwards 10 feet should be added to the width of the street. Houses of this class should be of a uniform height in each street. The space behind should, from the line of the back wall to the lane, be equal in breadth to the height of the front wall of the tenement, and the lane be 16 feet in width. In no circumstances should back lands be allowed. Back jambs of the tenements or returns in cross streets should not approach nearer to the centre of the lane than 44 feet. No separate dwellings in attics or in sunk floors should be permitted.

In the wider streets we would urge that they be freed from all unreasonable restrictions with respect to such projections as may be proposed ; such, for instance, as balconies and corbelled-out bay, or other projecting windows, as we are satisfied that in many cases such projections would considerably beautify and give a picturesque character to our street architecture.

By no means the least important class of property are the dwellings of the working classes. These houses should possess all the comforts and conveniences necessary for the physical and moral health of their inhabitants. An amount of at least 1512 cubic feet, and a height of ceiling in no case less than 9 feet, should be secured to each apartment. To 1512 cubic feet of apartment there should be at least 21 square feet of light.

The space between the back walls of compartments should not be less than 60 feet, with a central lane not less than 10 feet wide. No houses of this class should be built with dwelling accommodation in the sunk floors. The unhealthy concealed beds should in every case be condemned ; and all bed closets as substitutes should contain only a single bed,

have not less than 48 square feet of floor, and be both well lighted and ventilated. All fixed beds should be made of iron.

Water-closets should be attached to every dwelling, and water and gas introduced by the proprietor. The water-closets should be plentifully supplied with water, and sufficiently ventilated, and the apparatus should be simple, substantial, and little liable to accident or injury. One dust-shaft should be provided for each tenement, communicating from the stair-landings to a receptacle underneath.

The number of dwellings on each stair-landing of houses for the working classes should be strictly limited to three, making two houses of not less than a room and kitchen each, and one house of a single apartment; and for safety and ventilation the stairs should be scale stairs, lighted from the outside, and the steps should be not less than 3 feet 9 inches in length.

No privies should be permitted in courts, neither should there be ash-pits nor dung-steads. The police have it in their power to remove daily the accumulation of ashes, &c., as is the practice in many towns.

It ought to be imperative that no new houses should be allowed to be inhabited until they have been certified by competent authorities as being fit for occupation, or for the purposes for which they have been built.

All chimney-cans should be strongly secured, to the satisfaction of the authorities. Landlords should be bound to have all public stairs properly lighted with gas.

We strongly recommend that power be given to the authorities to provide suitable district baths and wash-houses for the working classes.

In the future laying out of grounds into building plots, we recommend that, from public considerations regarding both

the physical and moral well-being of the community, squares, circuses, and other large vacancies should be secured to the city, and that proper encouragement should be given to the securing of lands for the formation of public parks in different districts of the city, for the healthy recreation of its inhabitants, its adornment, and improved ventilation.

In respect to graveyards within the city, power should be sought to prevent any future interments within them, and by remaining open spaces, sacred to the dead, they would ultimately become serviceable in a sanitary point of view. Vault interments under buildings should be strictly prohibited.

There are many other subjects to which we might have directed attention in this section of the report; for example, fish shops, butchers' and green grocers' shops should be removed from the public streets, and district markets provided.

More stringent measures should be adopted for the ventilation of public works, which emit nauseous odours. We need not here advert to the importance of enforcing the consumption of smoke in all public works, as that subject is now receiving the careful attention of the authorities.

Greater attention should be given to the efficient lighting of all streets, lanes, courts, and closes. The lighting of courts and closes, as well as streets, should be under the management of the police.

All public places of amusement, or buildings where there may be large assemblages of people, should have fire-proof stairs, without wheeling steps, and of easy egress, and the doors should be made to open outwardly.

The opening up of new thoroughfares, and the carrying out of these suggestions in those portions of the city already built, will inevitably be a gradual work. At the same time, it is obviously very desirable that every facility should be afforded in carrying out those prominent points which the general good demands.

In obtaining an act to enforce these improvements, provision should be made for opening up streets, lanes, wynds, &c., in the denser parts of the city, and for acquiring ground on which houses for the working classes may be erected, with power to refeu at a moderate rate.

The principle we have previously laid down for new houses as to the number of dwellings to a given space of ground, should be made to apply in the reconstruction of all waste property in the city.

The board, or authorities appointed, should be empowered to levy for these purposes an assessment upon the citizens, not heavier than that presently exacted for the court houses and county buildings, which we believe to be not more than one penny per pound on rental. For such a praiseworthy object no one could reasonably object to pay so trifling a sum.

The proprietors of ground, in laying out plans for feuing, should be bound to make streets, &c., in reference to contiguous properties, whether already built or yet unbuilt, and should have these plans sanctioned, in reference to these and other points, by the competent authorities.*

All parties submitting plans to the board should be required to delineate on them the mode by which they propose

* 'But there is an important element of the subject generally that has not 'yet been considered, important alike to the comfort and convenience of the 'public ways, and, incidentally, to the public health as affecting general venti- 'lation. This is the arrangement and disposition of the streets in adding to 'a town. Owners of extensive estates, such as the Duke of Bedford, the 'Marquis of Westminster, Colonel Walpole, and many others, in London, 'have within their own hands, when laying out their lands for building, the 'means of protecting their own proper interests, and of subserving the con- 'venience of the public; but in such cases, even, it would be beneficial to all 'parties if there were a public authority competent to impose upon the several 'owners of adjoining lands, and of lands adjoining parts of a town already 'built upon, such arrangements as would make the future streets most con- 'venient to all, without inflicting injury upon any. If this be desirable as it 'regards large estates, it is much more so when small ones are affected, and to 'these the observation applies with full force.

to ventilate the houses. Every apartment of a house ought to be ventilated, independently of doors and windows.

Section Second—Drainage.

In approaching this subject we feel deeply impressed with its peculiar importance. The department of drainage occupies a position so prominent that, if defective, it will go far to neutralize or destroy any improvements that may be otherwise introduced.

Streets the most spacious, and squares the most magnificent, may adorn our city,—the purest water may pour out its abundant blessings, and yet a hot-bed of pollution may accumulate around and beneath us, the festering corruption of which will tend to frustrate what might otherwise be the purest development of sanitary art.

Having made a minute and personal inspection of various districts of the city, we have had no difficulty in obtaining a mass of conclusive evidence of the fact that the state of our

'A landowner laying out his land anew for building has the benefit of all 'existing public streets and roads up to his land, and for these he has paid 'nothing, and he ought to be compelled, in return, to open his roads, as a 'means of public access, to whatever may lie beyond, whether it be town or 'open country, upon such reasonable conditions as the circumstances may re-'quire in each particular case.

'These considerations become of even greater importance when the sub-'ject of drainage is considered, in connexion with the ventilation and the 'convenient use of streets. Sewers to be convenient must be led along the 'courses of streets, and consequently streets should be laid out, connected 'and extended with reference to the proper courses for the sewers, as well 'as for the streets as ways of communication to and about the houses.

'Streets, sewers, and drains, together with the contingent services of water 'and gas, and all other matters affecting the public health, comfort, and safety, 'or any of them, ought to be combined in one system, and be in every town 'under the conservancy of the same, and that a sufficient authority to regu-'late them for the public good.'—*Hosking's Guide to the Regulation of Buildings and Towns, p.* 54.

drainage is alarmingly defective, principally as regards the confined wynds, lanes, and closes.*

Like many other large cities, Glasgow has to contend not only with the existence of a scanty and defective drainage,† but also with another master evil, viz., the gigantic error of discharging into the bed of the river the accumulated filth and sewage matter of this vast community.

How far the practice of using a river for the drainage of any town upon its banks may be allowable in certain favourable circumstances we need not at present determine; but in the case of Glasgow, with a population approaching to 400,000, and a river, even in its improved condition, comparatively limited in width, depth, and velocity, the supposition that we may, within a very confined range, discharge with impunity such a concentration of poison, is an error the most untenable and dangerous. If the Clyde must be used as the great common sewer of this city, it must only be under such arrangements as shall secure its salubrity, instead of, as at present, loading our atmosphere with its deadly malaria.

In order to remedy these evils, we beg to submit the following plan for the drainage of Glasgow, as being at once practicable and effective.

First. That instead of running all the main sewers into the river in its course through the city, the whole sewage matter should be conveyed through properly constructed conduits to a distance, as far as practicable, below the city. It is further proposed that the run of these conduits should commence, say at the Molendinar Burn, where it enters the Clyde, thence to be conveyed westward behind the quay walls of the harbour, and beyond these along the bank of the river.

* It is gratifying, however, to know that the attention of the authorities has been given to the drainage of the city, and that, under the able superintendence of Mr Carrick, considerable improvements have already been effected.

† There is, we understand, about 90 miles of streets in Glasgow at the present time, and only 45 miles of common sewers.

These lines of main parallel conduits could thus have the benefit of a continuous scour of water from the Clyde, from a weir constructed for the purpose. The sewage matter thus copiously diluted might be at once discharged at the western extremity, and mingle with the waters of the tide. Whether or not advantage may be taken of preserving the sewage matter in tanks, or settling ponds at the termini of the conduits, and of using it for agricultural purposes, is a point in dispute, and we do not here give any opinion regarding it.

Second. Presuming that the principle of constructing these main lines of conduits is adopted, it is next proposed that all the main feeding sewers on either side of the river be led into them, that an abundant supply of pure water be secured in large tanks or reservoirs, at the highest levels of all these feeding sewers, which supply should be constantly kept up, and any sluggish soil or deposit cleared away by the propulsion of this water from these fountains, at regular and frequent intervals, and this more particularly during the hot months of summer. Of course, if the water be introduced to the city by gravitation, these tanks will not be necessary.

Third. With regard to the smaller or branch drains throughout the city, and particularly those connected with the dwellings of the humbler classes, a fountain-head of water should be established and maintained in each close or wynd, for the purpose of clearing them of all impurities. A similar apparatus could be supplied to the superior class of houses under the pavement in front, or in the lanes behind, to regulate which it is suggested that the police force of the city would be fully adequate, and thus a regular supply of water could be diverted into these channels at pleasure. In reporting upon their respective districts, it would then become part of the duty of these police officers to see that all this apparatus is maintained in good working order.

Common sewers ought to be carried along the centre of

lanes, where practicable, for, by the present system, wherein drains are in the centre of streets, the whole soil from water-closets, and the waste water and suds from sculleries and washing-houses have in most cases to be taken through the whole width of the house, rendering it often very unhealthy, and as the drains frequently require renewal and repair, giving rise to great annoyance and discomfort to the family. Besides this unhealthiness and annoyance, the additional expense of taking drains entirely throughout the width of a building will be avoided, and a large supply of house water more immediately obtained for detaching and carrying away the soil. Drains from surface channels, however, would require to be carried along the street, and should be returned at the corners of the different compartments, and let into the common sewers in lanes. By this method any unpleasant effluvia arising in the streets would be altogether avoided.

Fourth. In dense localities every privy and ash-pit should be removed, all ashes, &c., regularly taken away from the dwellings every day by the police, and instead of the old filthy privies at present in use, the new public necessaries lately erected by the police ought to be greatly multiplied. The soil from these might still continue to be carted away as at present, or they might be connected with the public sewers of the city, each having a large and efficient flushing apparatus attached to it.

These old public necessaries and ash-pits, which are so abominably conspicuous in the closes and wynds of the city, may be considered as a series of large stagnant and open cess-pools. The fœtid atmosphere arising from them is quite sufficient to generate pestilence of every kind.

The evidence of Henry Auston, Esquire, architect, upon these (stagnant) cess-pools or public privies is very strong. He says—'It was the state of the soil where the Blackwall 'Railway was constructed which first drew my attention to

'the necessity of abolishing (all such) cess-pools in towns. 'I have found that fœtial matter, or the soakage from the 'cess-pools, had in some cases actually joined from house 'to house. The soil in immediate connexion with the 'houses, and surrounding the foundations, was so saturated 'from the cess-pools as to be, in my opinion, in a worse con- 'dition than in dung heaps. It was exceedingly offensive to 'remove, and it was constantly matter of remark how human 'beings could be found to do it. When exposed, it drew 'forth the complaints of the neighbours at some distance. 'I have no hesitation in expressing my opinion, that in all 'town districts, and in all districts wherever any drainage 'can be got, the use of (such) cess-pools ought entirely to be 'prohibited.'

Under this head it may be stated that proprietors ought to be compelled to supply the means of getting quit of all the soil, ashes, and refuse connected with every house, whether in property already occupied, or in that about to be built.

Fifth. Intimately connected with the working of water-closets, is a cistern for the supply of water. The cisterns at present in use are liable to many objections; the apparatus of ball and ball-cock is cumbrous and liable to go out of repair; the water frequently stagnates and becomes foul, especially in houses that have been for any length of time unoccupied; noxious impurities are generated, and if any vegetable matter is mingled with the water, the lead is oxidized, and the water becomes poisonous.

To obviate these objections, it is proposed that a circulating cistern should be substituted. This cistern should consist of a cylindrical tube or box of cast-iron from twelve to eighteen inches diameter, and from five to six feet in length, having the requisite connexions for the supply and discharge of water attached to it. As this cistern would in

other words be simply a continuation-pipe from the main, but of much greater diameter, the water contained in it would be constantly circulating, and always fresh and good, and, according to the dimensions given it, would contain from fifty to sixty gallons to serve against contingencies.

Sixth. In order to the effectual carrying out of these measures, it is evident that the city must be supplied with the gravitating powers of a large body of water, the minutiæ of which will be discussed under another (the third) section of this enquiry.

Having thus enumerated the leading principles which ought to govern an efficient system of drainage for the city of Glasgow, we beg to submit a few additional statements tending to illustrate the subject by a few practical details.

1*st.* Respecting the construction of the sewerage. In order that the offensive matter contained in every sewer be passed off as quickly as possible, it is evident that every impediment to the free passage of the soil should be removed, and every contrivance tending to accelerate its movement be adopted. Thus, we find from experiment, that if the friction of a certain body of water be represented by 124 in a flat-bottomed sewer, by forming the bottom of the sewer into the segment of an arch, such as is used in the Westminster district, the friction of the same body of water will be reduced to 115 (See figure No. 1); and if the form of the curve be still further modified to the egg shape, such as is used in the Finsbury district, the friction will be still further reduced to 100 (See figure 2). We therefore conclude that, in so far as formation is concerned, those constructed of the egg shape are the best. Again, we find that the friction of water on a glazed stoneware surface is still less than on a brick and lime surface of the same form. We conclude that

the construction of sewers and drains of that form and material, such as are exhibited in Figures 2 and 3, are superior to them all. We would therefore propose that all the main drains and sewers should be so constructed, or, at all events, that the under half of them should be lined with this material. Besides, we are assured that this stoneware material is so strong that it is capable of resisting any amount of superincumbent pressure, that it has sustained an internal pressure of 300 feet before breaking, and that the material itself, for all draining purposes, is imperishable.

The pipes, to which we have more particularly referred, are such as are manufactured at the Lambeth potteries, London, or at the St Helen's potteries, Lancashire.

The egg-formed brick sewer of Finsbury is much better adapted to resist lateral pressure than the upright sewer of Westminster, and the economy of material in the construction of the one, as compared with the other of the same capacity, is as 175 bricks per foot for the former, to 261 of the latter. One mile in length, therefore, of the upright form would require 1,376,080, while one of the egg form would require only 924,140 bricks, thus establishing a clear saving of more than half a million of bricks per mile.

In addition to this, we have to state that the sizes of sewers and private drains hitherto in use are much too great, and that if the vitrified stoneware pipes above referred to were generally adopted, as they ought to be, a pipe six inches in diameter is quite large enough for a large tenement of houses, and one of two feet bore quite sufficient for the main sewer in any important street.

2*d*. A copious flow of water from the highest levels of the feeding sewers has already been provided for ; but there are many of these sewers, particularly on the south side of the river, the declivity of which is so very small that

it is considered highly expedient that their flow should be accelerated by a complete flushing apparatus, having the floodgates placed across the sewer, say every fifty yards apart. By these means a large head of water is collected and suddenly discharged through the sewer as required. In the meantime, however, and until another and better supply of water can be introduced into the city, arrangements ought to be made with the present Water Company to flush all the sewers, at frequent intervals, which are within workable distance of the company's reservoirs at Rotten Row and Garnet Hill.

3d. In order to facilitate the flow of all sewage matter at the various junctions, it ought to be made imperative that all those junctions should be formed to a regular curve of a quarter circle, having as long a radius as possible, and that they should never be connected at right angles. These statements are supported by the following facts, as elicited by repeated experiments :—

For a curved junction of 20 feet radius, resistance 100
For a curved junction of 5 feet radius, resistance 146
For a curved junction at right angles, resistance 316

4th. All the gully-holes in streets, as also every connection with main and branch sewers and drains, should be trapped upon the most approved principle, so as to prevent any effluvia from contaminating the surrounding atmosphere, or finding its way back through the private drains into the various dwellings of the city.

5th. Were the supply of water copious, the declivities of the sewers considerable, and the drains all properly constructed as above described, the necessity of all flushing would be obviated, and comparatively little foul air would be generated. But in Glasgow, as in many other manufac-

turing cities, many of the main sewers are deficient in fall, condensed steam and warm water from public works are perpetually running into them, which aid decomposition, and thus generate effluvium, so that deleterious and offensive gases are always present in the sewers, and hence the need of devising some effectual means for ventilating them. The erection of large chimneys at the highest levels of the sewers has been recommended; but we are rather disposed to adopt a series of ventilating shafts for this purpose, which could be carried up through the gables of the various tenements, and would thus be the means of carrying off any foul odours that may be lodging in the private drains, as also any exudations arising from the main sewers being imperfectly trapped. 'And it 'must be borne in mind that a communication by a drain 'from the sewer, if not properly ventilated and trapped, may 'bring into the house the emanations from a whole district, 'and that wind blowing into the mouths of sewers carries a 'backward current of emanations into the houses and streets 'of the upper parts of the district.'

6th. In order to the effectual carrying out the various recommendations above enumerated, it is absolutely necessary that the whole of the existing drainage throughout the city should be examined and made good, and that a complete survey of the whole city be immediately proceeded with. This might be done in sections, and delineated to a large and uniform scale. All the existing leading sewers, together with the branch and private drains, where practicable, should be accurately laid down, at the same time the dimensions of the sewers should be shewn,—their depths, declivities, position of the flushing-gates, gully-holes, &c. These plans might be engraved or lithographed, and distributed amongst professional men, as well as the various public bodies interested in city property, to guide them in their building operations.

It is further suggested that the delineation of a series of contour lines, either upon the same plans, or transcripts of them, would be of immense benefit, so as to shew at a glance the different and corresponding levels throughout all the parts of the city. The application of a general system of drainage would in this way be much simplified, and the process of harmonizing the levels of the different lines of sewers in the various sections of the city would be rendered much more simple, accurate, and satisfactory.

7th. That as it will be necessary to break up both the streets and the pavement for the introduction of the new, as well as for repairing the defects in the old drains and sewers, it would be of immense importance to have the pavements, as well as the carriage-ways, committed to the care of one undivided trust, and maintained at the public expense. It would be of incredible benefit to the public, inasmuch as the various pathways or pavements throughout the city would be maintained in a much better condition, and the perpetual jarrings betwixt the proprietors and the police be for ever terminated.

8th. In proceeding with these remedial measures, we consider it imperative that the Molendinar and Barrowfield Burns be converted into common sewers, and arched over; that the Pinkstone Burn, and all drains or sewers from distilleries, chemical or other public works, be conducted by separate drains into the main conduits, and connected with them at a considerable distance below the city; that no drains from any other property be led into them; and that, as the value of adjoining property is seriously affected by the noxious vapours arising from the chemical works, some stringent measures should be adopted to keep them under reasonable control, as well as to keep down or prevent the effluvia.

9th. That a separate plan for the drainage of each building or tenement proposed to be erected within the boundaries, specifying the various descriptions, sizes, and declinations of the various drains, be submitted along with the other necessary plans, either to the Dean of Guild Court, or to a board appointed for sanitary purposes, and sanctioned by them as sufficient, and that no connexion betwixt these private drains and the main sewers be allowed without a regular certificate of their sufficiency.

That the board should have full power to assess the various parties proposing to make use of the main sewers in proportion to the amount of their frontage. That in the event of any proprietor allowing any of his private branch drains to go into disrepair, or to become foul from neglect, so as to become prejudicial to the health of the inhabitants, the board shall have the power to cut off the connexion with the main drain, and to declare the property uninhabitable. That the different officers connected with the board be paid from a regular assessment levied upon the whole community, and that this board should hold such stated meetings—say weekly, or oftener—as may be considered necessary, for the purpose of hearing and adjudicating upon such cases as may come before it; and that the members and officers connected with it be enjoined to make stated and frequent inspections of the whole district committed to them, and to prepare detailed annual reports of the condition of the whole city, which should be regularly published for the benefit of all concerned.

Section Third.—Supply of Water.

A sufficient supply of good water is of great importance in every situation, but more especially in cities and towns. Prior to the commencement of this century the city of Glas-

gow was dependent on spring wells, or butts supplied with water from the Clyde, and sold on the streets at a halfpenny per gang.

In the year 1806 the Glasgow Water Company was formed, and the Cranston Hill Company in 1808. The population at that time amounted to about 100,000, and the city was very well supplied for many years by these two companies.

The rapid increase of the city in population as well as in public works, soon required a greater supply than could be furnished; and a few years since the inhabitants of the Gorbals, on the south side of the river, formed a joint-stock company for supplying that district by gravitation, which is at present in full operation, and giving great satisfaction. At the present time the Glasgow Water Company undertakes to supply the north side of the river only. In this district the population amounts, in round numbers, to about 300,000, (or three times the amount at the time the two companies were formed,)—without considering the increase of public works, on this account, the high parts of the city, such as Garngad Hill, Garnet Hill, and Port-Dundas, are so indifferently supplied as to require the use of force-pumps and cisterns.

We are of opinion that the best method of supplying cities and towns is by gravitation.

We do not here give any opinion as to whence the water should be brought, or the cost of such extensive works as will be necessary. We only recommend that the water be carefully selected, pure, soft, and wholesome, and that the supply be abundant.

The gravitation system possesses great advantages. The annual expense connected with it is comparatively small. The Gorbals works, for instance, are stated to require only one superintendent, with the occasional assistance of two or three labourers.

On the other hand, the steam power of the Glasgow Water Works is above 650 horse power, which, taken at ten pounds per horse power, amounts to 6500 pounds per annum, to which must be added the amount of capital, the risk of breakage, and the tear and wear of expensive engines.

The supply of water ought to be constant, and we would suggest that it be imperative on proprietors and landlords to take the water into every house, however small. In a sanitary point of view this would be very beneficial, for if the water has to be carried up two or three pairs of stairs, it will be done as seldom as possible, and, as a natural consequence, the dwellings and their inhabitants will be kept in a filthy condition.

The stand-up pipes in closes, courts, and on the streets, should be all done away with, the waste of water being enormous. The courts and closes are by these pipes kept always wet, while the water soaks into the foundations of the buildings, and makes them damp and unhealthy. Proper pipe-drains should be laid under ground to carry all the waste and rain water into the sewer in the street. No surface-drains should be allowed.

Were the water brought into Glasgow in sufficient quantities, say fifty gallons per day for each individual, which is the amount we would recommend as being sufficient for the inhabitants, and for the supply of cattle, steam-engines, breweries, and other public works, and for watering the streets, we are of opinion that a considerable revenue would be derived from the application of water engines for a great variety of purposes. Small steam-engines would, to a certain extent, be given up, and water engines used in their stead, thereby diminishing the smoke nuisance, or they might be used where steam-engines are prohibited. The engines could be supplied through a meter, so that it might be used for an hour or two without any trouble or loss. If the source of supply be

sufficiently elevated, the use of fire-engines could be dispensed with. Gorbals has 225 feet, Stirling 450 feet, and Kilmarnock 270 feet of head pressure, with the pipes constantly charged. Fire-plugs might be placed on both sides of the streets, at the distance of a hundred yards apart, so that, by the application of a hose, fires may be extinguished in a very short time,—in many situations, before the engines and water-butts could be brought into operation. The streets might also be watered from the same openings, and the present watering carts dispensed with.

The gravitation system is now becoming very general, being found much superior to any other. At present Edinburgh, Gorbals, Paisley, Stirling, Kilmarnock, New York, Liverpool, Manchester, Dundee, and Dumfries are all supplied, or in course of being supplied, on that system.

Where at all practicable, except for perpendicular pipes, lead pipes should not be used.

The supply of water ought to be in the hands of the corporation. At present, during the prevalence of epidemics, the corporation are obliged to pay for the water used to wash out lanes and closes.

In a sanitary point of view, the work is only half done unless a complete system of drainage be adopted.

In this report allusion has at different times been made to the establishment of a board, under whose management the various arrangements for carrying out the sanitary improvements of the city should be placed. Whether that board should be a distinct one from any existing municipal court, or what should be its constitution, we do not feel called on to give any judgment.

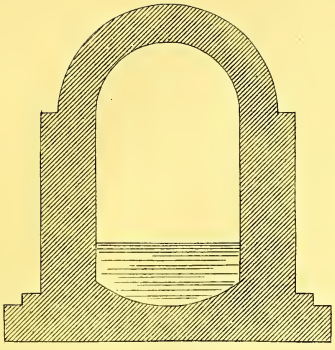
There can, however, be but one opinion as to the importance and necessity of having the great evils under which we are at present placed arrested and remedied, and their future perpetration prevented. Without such an authority, the

mere utterance of any opinion, or the laying before the public any suggestions, however good they may be, will never be any guarantee for the successful and universal adoption of remedial measures. These cannot be left to the discretion or whim of parties interested. Nor will such parties have any grievance to complain of. They will be placed on the same footing as their neighbours. They will together be promoters of the public good, and will inevitably find, that whatever is conducive to the public good subserves their own interests. There is no hardship to any one in particular, if all parties are compelled to shew how they intend to lay off their grounds, how they propose to ventilate and drain their houses; but, on the contrary, in all this there is an enormous amount of beneficial results secured to the whole community.

The wise administration of such remedial and preventive measures, with the concurrence and coöperation of all parties, may yet redeem our city, even in our day, from occupying the most unenviable position of having probably the highest rate of mortality of any city in the empire, and of seeing it raised to the proud eminence of being not only a great commercial city, but at the same time one of the most salubrious and healthy; and thus, by every man caring not for his own, but for the things of his neighbour, the Christian minister will find his labours appreciated, and his hand strengthened, when he is called to labour, not amongst a population living like the neglected off-scourings of society, but elevated to the enjoyment of comfortable home and fireside endearments.

Thus shall we, under the Divine blessing, advance one great onward step in rescuing the masses from the depressed and degraded state in which they have too long been allowed to remain.

CHARLES WILSON,
J. T. ROCHEAD,
JOHN HERBERTSON,
Conveners.



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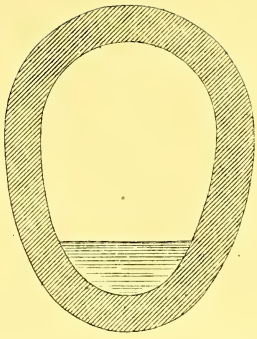

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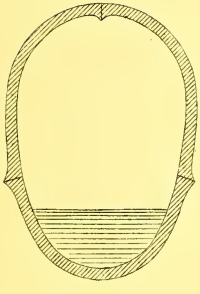

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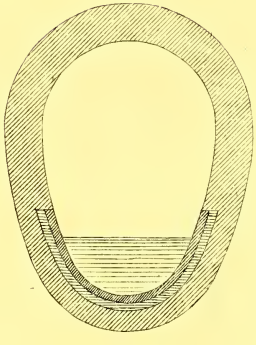

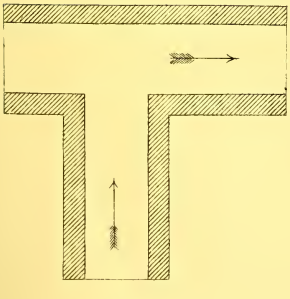

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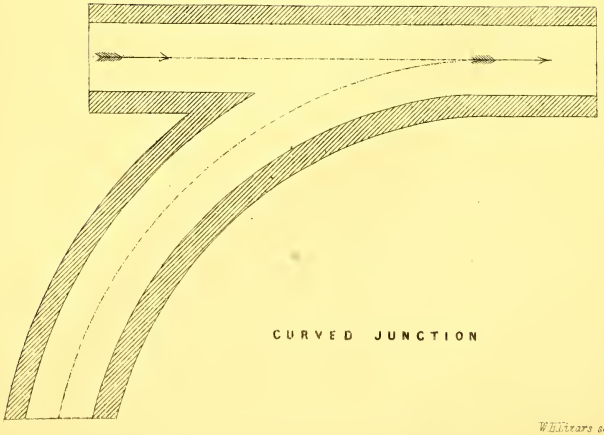

CURVED JUNCTION

Transactions of the Architectural Institute of Scotland.
Session 1851–52.

No. IV.

ADDRESS

DELIVERED AT THE FIRST MEETING IN ABERDEEN OF THE ARCHITECTURAL INSTITUTE OF SCOTLAND.

(8th January 1852.)

BY

ALEXANDER FORBES IRVINE, Esq.
YOUNGER OF DRUM.

Gentlemen,

We had hoped to assemble on the present occasion under the auspices of one of our Vice-Presidents, whose position in this county, not less than the interest which he has displayed in matters relating to the science, would rightly have entitled his opinions on architectural subjects to much consideration and respect. Circumstances have prevented his attendance, although I know that he continues to feel an interest in our welfare; and while I trust that our next meeting in this place may be under the presidency of the Earl of Aberdeen, I proceed to discharge the duty imposed on me, of explaining very briefly the origin, the nature, and the objects of the Architectural

Institute of Scotland, the intentions of its founders, and the manner in which these intentions have hitherto been carried into effect.

To many of those here present, who have tended the Institute from its infancy, who have assisted us by their valuable advice, and who have cheerfully and unhesitatingly placed at our disposal that time which they could ill afford to borrow from other and laborious occupations, I am sensible that no such explanation is required; but on the occasion of our first meeting in this city, I may be permitted to state to those who may not as yet have joined our ranks, the general nature of the Association.

The Architectural Institute of Scotland is now in its Second Session. The objects contemplated in its formation were generally these:—The advancement of the art and science of Architecture; its past history and theoretical principles; and the manner in which these principles are developed and applied in practice. The subject, it will be admitted, affords sufficient scope for inquiry; and accordingly the published volume of our Transactions, to which we may be permitted to refer as some earnest at least of our future labours, comprises contributions of various interest on the history, theory, and practice of the art. In the historical department, I need only refer to the accurate 'Notes of early Scottish Architects,' contributed by a Member of our Council; and which will in due time be followed by the publication of a paper by Mr Laing on the subject of the Architect of Heriot's Hospital, Edinburgh, and in which that oft-debated question is now, I think, practically set at rest. The papers on the Architectural Features of Edinburgh and on the Curves in Grecian Architecture may be referred to what, in default of a better term, I must designate by the new and rather affected description of the æsthetic de-

partment of the science,—that which seeks to discover and apply the theoretical principles of beauty in Architecture. In the essays on the construction of cottages for the labouring classes we have indications of the practical utility of the art, which, while it can design the majestic pyramid of Egypt, or the vast cupola of St Peter's,—the work of the great architect who raised the Pantheon in the air,—' of him who pillar'd to the ' Gods of Rome a new Olympus,'—does not deem it unworthy of her to descend to the construction of the humblest cottage. So it is, indeed, with all true science;—it experiences no degradation in its practical applications; and Astronomy, the sublimest and most perfect of all, having measured the vast distances of the remotest stars, and weighed, as it were, the earth in a balance, descends to fulfil the requirements of earth's inhabitants, and to afford to the mariner a sure and unerring guide across the pathless ocean.

One other object of the Association, and one of no ordinary importance, remains to be noticed,—I allude to the proposal for founding at some future, but, I trust, no distant period, a Professorship of the history and theory of the art. This formed a prominent feature in the original idea of the Institution, and I hope the time has now arrived when we may be enabled to carry it into effect. No other means appear so well fitted to advance the standard of knowledge and of taste in Architecture throughout the country generally; and, after all, it is to the elevation of public taste that we must look for any beneficial effects of a permanent character. As the public is the employer, so is the public opinion in this, as in more important matters, the great and final court of appeal; and to the elevation of that taste, by whatever means attained, we must eventually owe the improvement of our national edifices.

While, however, I would thus explain very briefly the

nature and objects of the Institute to those who may yet be strangers to its history and objects, I should, I think, be wanting in an important part of my duty, did I not, in name of the citizens of Aberdeen, tender a hearty welcome to those members who have come from a distance to take part in our proceedings. Our Cross, indeed, no longer 'aboundantlie runs 'wyne,' even in honour of a Royal visit, and I fear the custom of pledging each distinguished visitor in a 'cup of Bon-'Accord' is now, like many other usages of the good old times, practically in desuetude; but I trust we have not yet utterly lost all claim to those 'civill inclinations' for which, nearly two centuries ago, a local chronicler gave us credit,—'The 'like,' he adds, *i.e.*, the civil inclinations, 'not easie to be fund 'under so northerlie climats, damped, for the most pairt, 'with air of a grosse consistance.'* Perhaps in default of more substantial means of evincing our welcome, I may be permitted for a few minutes to assume, however unworthily, the office of '*Cicerone*,' and point out to our visitors of to-night a few at least of the more remarkable objects of the town and neighbourhood. The subject, indeed, has been so skilfully and so industriously handled by our numerous local historians that little of novelty is now to be expected—the labours, especially of the Spalding Club, having elucidated many interesting points in our antiquarian and topographical history.

The meetings of the Architectural Institute have as yet, I believe, been held exclusively either in the Scottish capital, or in the great commercial metropolis of the west. Without possessing the commanding advantages of natural situation, in which Edinburgh is perhaps without a rival, and scarcely competing with the enormously extended commerce of the Clyde, and the engrossing industry of the manufacturers of Glasgow,

* A Description of both Touns of Aberdeen, by James Gordon, printed for the Spalding Club, p. 3.

the city of Aberdeen boasts of an antiquity superior to most of its Scottish rivals. I fear, indeed, that we must resign the once fondly-cherished fable of the identity of Aberdeen with the Roman Devana,—the latter being now, by the industry of Chalmers, and subsequent antiquaries, sufficiently identified with another site; and it may be that we must assign to the same cause—the universal desire of local historians to connect the early history of their city with ages long gone by—the story of Aberdeen having received its immunities as a burgh from Gregory the Great, king of the Scots, in the year of Christ, 876. Still, sufficient remains behind. 'The most ancient of our burghs,' writes a distinguished antiquary of the present time, 'cannot date 'their privileges higher than the age of David, the father of 'his people, no less than of the Church; nor support their 'individual claims by charters earlier than the reign of his 'grandson William. With the most ancient, as well as the 'most important, ranks the burgh of Aberdeen. Long before 'Edinburgh had acquired the dignity of a capital, or even the 'first place among the four burghs of southern Scotland—'while Glasgow was yet an insignificant dependent on its 'bishop—Aberdeen had taken its place as a great and in-'dependent royal burgh, and a port of extensive foreign 'trade.'*

In commencing our survey, the prominence of the principal church in the general view of the city is but one of many reasons for the preference being accorded to it. At what precise period the earliest church was here consecrated to St Nicholas, the patron saint of the burgh, does not seem to have been accurately ascertained. Its antiquity, however, is considerable. It appears to have been in a flourishing state in the thirteenth and fourteenth centuries; and numerous

* Description of both Touns, Preface, p. viii.

chantries and alterages were instituted by benevolent founders. 'At the epoch of the Reformation,' says Kennedy, 'it was 'regarded as one of the handsomest parish churches in Scot- 'land. It was built in the Gothic style, and the dimensions 'of its nave, the roof of which was supported by eight columns 'on each side, were 117 feet of length, by 66 feet of breadth, 'including the side aisles. There were six galleries in it, 'three on each side, the fronts of which, and of many of the 'pews in the body of the church, were constructed of black 'oak, having various emblematical figures neatly cut in re- 'lievo.'* About the beginning of the eighteenth century the church became ruinous and unserviceable, and was abandoned as a place of worship in 1732. Ten years afterwards, the whole fabric, we are told, fell to pieces, and was only replaced in the year 1751 by the building now known as the West Church. The exterior of this edifice possesses little that is attractive, but the interior, with its strong square pillars and circular arches, is not destitute of a certain massive and imposing solemnity. It is farther remarkable as having been executed from a design gratuitously furnished by the well-known architect James Gibbs, and forming, so far as I am aware, his only contribution to the architecture of his native town. It has been customary to estimate rather lightly the merits of Gibbs. 'Without deviating from established rules,' says Walpole, 'he proved that mere mechanical knowledge may avoid 'faults without furnishing beauties; that grace is not depend- 'ent on rules; and taste not to be learned;' and his architectural works are challenged by the same popular critic as deficient in 'the harmonious simplicity which marks genius.' These are hard terms; but Walpole's is not the only instance in which the desire of epigrammatic composition has led to the neglect of truth in criticism. Gibbs, it is true, cannot

* Kennedy's Annals of Aberdeen.

claim the palm of great original genius, but he is entitled to a highly respectable position among the architects of that age, and many of the faults which have been charged against the public buildings executed under his superintendence appear to be more justly referred to the *quasi*-classical style of architecture then generally adopted—a style possessing neither the simple majesty of the Grecian, nor the imposing magnificence of the pointed architecture.

The East Church occupies the site of what was once the choir of the Old Church of St Nicholas. Its erection was commenced in 1477, and, proceeding very tardily, was not completed till 1507. The Old East Church, as it was termed, and as it stood till a very recent period, is described as having been a 'neat Gothic building, entirely divested of 'ornament or carved work. It was 86 feet of length to the 'breast of the chancel, and 64 of breadth, including the side 'aisles. The roof of the nave was supported by four arches 'on each side, which sprang from Gothic columns without 'any ornament. Under the chancel, which was 18 feet by 12, 'was a neat chapel dedicated to the Virgin Mary.'

The building now described has lately been superseded by a modern structure, the interior of which presents the usual heavy galleries, supported by slim cast-iron pillars, which unfortunately distinguish the Church Architecture of recent times, and neither requires nor deserves particular notice.

But by far the most ancient portion of the church now remaining, as it is also by much the most interesting, consists of these aisles, one of which is known as Drum's Aisle, while the other derives its distinctive name from that of a family of Collisons, of some repute in burgh history. In the former of these, indeed, recent restorations, as they are termed, have left but few characteristic features. Paint and plaster, divided by lines so as to imitate aslar work, in defiance of

taste and of Ruskin, have modernized the aspect of Drum's Aisle; but the other portion of the transept is particularly worthy of careful and minute observation, owing to the existence of certain Romanesque features particularly observable in an old doorway, entering originally into what is now the West Church, and also, although of later date, in the four tall pillars which support the spire. All these remains will, I trust, be more minutely examined and described by some skilful member of the Institute.

To pass for a time from ecclesiastical to secular buildings, the attention of the spectator can scarce fail to be arrested by the prominence of the Market-Cross. Although without pretension to vie with the magnificent Queen Eleanor Crosses and structures of a similar character with which England abounds, it is undoubtedly the finest example which Scotland possesses. The present building replaced the old cross, from which many a proclamation had been made during the troublous times of Scottish history. If the semi-classical style which characterizes its architecture be amenable to criticism, yet if it be, as is generally supposed, the design of a country mason, the edifice must be regarded as highly creditable to his taste and skill. The records of the town for the year 1686 bear evidence of a payment of 1800 merks, or about £100 sterling, on account of the building of the market-cross to John Montgomery of Old Rayne, the ancestor, as I imagine, of a long line of hereditary masons, who are interred by the old parish church of Auchindoir, whose little Norman doorway, and some other peculiarities, are not unworthy of notice among the minor ecclesiastical antiquities of the county.

The principal bridges in Aberdeen are only two in number. Of these, one is of ancient, the other of modern date. The bridge of seven arches which spans the river Dee forms

a venerable and not unpicturesque object, and, till superseded by the all-conquering rail, constituted part of the principal line of communication with the south of Scotland. It owes its foundation to the excellent Bishop Elphinstone, although it was not finished till the episcopate of his successor, Bishop Gavin Dunbar. A deed of agreement is still preserved, by which, on the completion of the work, in the year 1527, the latter prelate made over to the Magistrates and Town-Council certain lands of Ardlair to provide for its future maintenance and repair. The trust has been well fulfilled. The old bridge shows few symptoms of decay, and having been recently found too narrow for the increasing traffic, has been skilfully widened, its peculiar character remaining in a great degree unimpaired.

The only other bridge which I shall notice, as connected with New Aberdeen, owes its construction to the genius of Telford, and forms one of the many instances of that skill which raised the stone-mason of Eskdale to the highest eminence in his profession as a scientific engineer. During the year 1801, and while carrying out those plans of improvement which resulted in the formation of the magnificent approach to the town now known as Union Street, it became necessary to arch over the hollow or ravine through which flows a small streamlet called the Den Burn. A scheme had been prepared for spanning the valley by three insignificant arches, when fortunately Mr Telford, who happened to pass through the town, was consulted by the promoters. Viewing the capabilities of the native granite, he prepared a plan which would not only have strikingly exhibited the excellency of that material for the purposes of construction, but would have adorned the city with a bridge of 150 feet span, the largest in the kingdom. Motives of economy, however, interfered; a simpler design was obtained; and, in order to

take advantage of some parts of the buttresses which had been already built, the span was reduced to 130 feet, the rise of the arch being 29, and the breadth across the soffit 43. Although thus shorn of the gigantic proportions originally intended, it is still a noble span—with one exception, the Bridge of Taff, in Glamorganshire, the greatest of any stone bridge in Britain; and one cannot help wishing that a touch of the magic wand of the enchanter would bring under it the channel of either of the two kindred rivers, instead of the filthy and uninteresting streamlet which here flows confined between its formal banks.

Many buildings of minor importance might here claim a notice, did time permit. Some picturesque houses in the Schoolhill have been made known by the accurate pencil of Mr Billings; and the architectural visitor ought not to neglect the singular building known as Wallace Nook, although I fear that the origin of the name, and the history and destination of the building, involve questions of which I am unable to offer any satisfactory solution.

In these slight and desultory notes on the public buildings of Aberdeen, I have limited my remarks to the works of the architects of past ages. I must not, however, omit noticing one whose professional career has but lately closed, and to whose taste and genius Aberdeen is indebted for many of its most remarkable architectural features. To those who are acquainted with the recent history of the city, I believe it will be unnecessary to say that I allude to the late Mr Archibald Simpson. His earliest work of importance is, I think, St Andrew's Church, King Street; and it appears to me to be highly creditable, if we consider the period of its erection. When Mr Simpson's architectural practice commenced, the revival of pointed architecture had scarcely begun. One point is remarkable,

that, in that revival the English Perpendicular style should have been so generally adopted, more especially as no authenticated instance of its use, so far as I am aware, is to be found in our native architecture. Some portions, indeed, of Melrose Abbey have been thought to present some resemblance to that style, a matter easily and satisfactorily accounted for by its proximity to the English border. But, on the whole, I believe the indigenous Scottish Architecture bears much more strongly the impress of the French Flamboyant than of the style which prevailed in England during the same period—a circumstance which, with many others, bears witness to the close connexion which long subsisted between the kingdoms of France and Scotland. Not, indeed, that I would apply to the English Perpendicular the epithet 'detestable,' which has been conferred on it by a distinguished critic and member of our Institute. I would willingly forgive it much,—more even than I think it requires—were it only for the sake of that delicate and exquisite fan-tracery which it developed and carried to perfection. It is now, however, very generally admitted that it is neither the most perfect nor the most appropriate of the Pointed styles, and I think there is little difficulty in perceiving a marked and growing preference for the earlier architecture.

But I return from this digression. The buildings which Aberdeen owes to the genius of Simpson are considerable in number and various in style. The Infirmary, a tasteful and elegant classical structure, is so secluded, that it requires the tourist to set out purposely in search of it. The new Marischal College, occupying the same site as the old building founded by Earl Marischal in 1593 on the ground which had belonged to the order of Franciscans, is similarly obscured, and although the change would in-

volve the sacrifice of some old houses of considerable picturesqueness and of some local interest, it is difficult to restrain the wish that the day may come when the buildings of the College may be thrown open to the Broadgate. The spacious and elegant new market place will repay the inspection of the architectural visitor; while the tall and gracefully tapering spire of the Free Churches in Belmont Street, one of the latest works of the architect, is also one of his most successful, forming unquestionably the most elegant spire which adorns the town. Even the colour of the somewhat unusual material is not without its advantage, and when mellowed and subdued by the rust of ages, its warm tint will contrast effectively with the prevailing coldness of the native granite.

Nor should the architectural tourist close his rambles without visiting the quiet and secluded precincts of the rural town now known as Old Aberdeen—having long since exchanged for that designation its more ancient name of the Kirkton of Seaton. Earlier than the constitution of Aberdeen as a burgh, 'was the foundation of the pretty rural village 'that existed even before the settlement of the Cathedral at 'Old Aberdeen.'* After the lapse of centuries it still retains much of its mediæval quiet and solitude, and forms, in this respect, a striking contrast to the trade and bustle of the busy commercial city where we are now assembled. There, above the tops of the patriarchal trees, rise

> 'The distant spires, the antique towers,
> 'That crown the wat'ry glade.'

There, too, as at the poet's much-loved Eton, 'grateful science' rears an enduring monument to the name of a royal patron, and to the still more solid munificence of the good Bishop Elphinstone. He lies interred within the classical precincts of his own

* Gordon's Description of both Touns, Preface, p. viii.

University. The buildings of the King's College commenced as early as the beginning of the sixteenth century, and, since altered and augmented at various subsequent periods, afford, in the great spire, so nearly resembling that of the Cathedral Church of St Giles in Edinburgh, and in the Chapel, with its excellently carved miserere-seats, matter for much interesting and useful examination. A catastrophe befell the original spire. The faithful chronicle of Spalding contains this note, under the date 7th February 1633 :—'Hideous winds' —'the like had never been seen in these parts.'—'It threw 'down the stately crown, bigged of curious eslar work, off 'the steeple of the King's College of Old Aberdeen, which 'was thereafter re-edified, and built up little inferior to the 'first.'

Not far removed from this ancient seat of learning is the Cathedral Church dedicated to St Machar. Tradition records that the saint was enjoined to proceed on his journey of conversion until he should arrive at a point where the windings of a stream, as it joined the ocean, assumed the form of a crozier, and that there he was to cease his wanderings, and found his church. The value of the legend may be doubted, but unquestionably the situation bears evidence to the regard for surrounding scenery which distinguished the churchmen of the earlier ages in fixing the positions of their cathedrals. The church itself is architecturally interesting, as exhibiting the permanency of the material of which it has been constructed. The present building is said to have been founded by Henry Cheyne, Bishop of Aberdeen, in the year 1320, and to have been carried on by Bishop Alexander Kininmont in 1333. We are told that Bishop Henry Leighton, who held the episcopal see from 1424 to 1442, raised the walls to their just height, and built or rather finished those twin steeples, which, after the lapse of centuries, retain their sharp-cut

angles, as if the stones had but yesterday left the hands of the workman. One very remarkable effect of the obduracy of the granite remains to be noticed, and is here particularly displayed, viz. the extreme simplicity thus enforced on the architectural character of the edifice. The principal portions belong to the Decorated age ; while they, in many instances, display a degree of simplicity, and even sternness, more in character with the Norman period.

The two principal bridges of New Aberdeen have been already noticed, but one more venerable, and far more picturesque than either, here spans, with its fine Gothic arch, the sullen waters of the Don. The Bridge of Balgownie also enjoys the rare merit of having been celebrated in song by poets of different times. The traditional rhyme which attaches to it is familiarly known in the neighbourhood, although, to judge from the strength of the old bridge, the catastrophe which it predicts is as improbable as ever—

‘ Brig o’ Balgownie, wight is thy wa’,
‘ Wi’ a wife’s ae son, on a mare’s ae foal, down shalt thou fa’.’

Arthur Johnstone, the author of many verses that dispute the palm of Latinity with Buchanan, has celebrated the spot where

‘ Amnis aquas uno pons admirabilis arcu
‘ Integit, autores suspicor esse Deos.’

And the lines in which Byron has sung the Bridge of Balgownie, and the boyish recollections which were recalled by the mention of its name, are probably well known to most whom I now address—

‘ As Auld Lang Syne brings Scotland, one and all,
‘ Scotch plaids, Scotch snoods, the blue hills and clear streams,
‘ The Dee, the Don, Balgownie’s brig’s black wall,
‘ All my boy feelings, all my gentler dreams,

'Of what I *then dreamt*, clothed in their own pall,
'Like Banquo's offspring; floating past me seems
'My childhood in this childishness of mine;—
'I care not—'tis a glimpse of 'Auld Lang Syne.''

We have lately heard something of projected improvements on the bridge, or at least on the approaches to it. Into the merits of the precise changes recommended I do not wish here to enter, but I may be permitted to express at least a fervent hope that no rude hand may ever be raised to impair the picturesque character of the venerable structure. Writing of a proposition of a different character, which once boasted its advocates, a local tourist declares that the memory of its supporters 'deserves to be execrated to the latest posterity.'* I should be tempted to invoke the same architectural anathema on all who would lay ruthless hand on the old 'Brig o' 'Balgownie.'

* Description of the East Coast of Scotland, by Francis Douglas.